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INFLATABLE CRIB

BACKGROUND

Portable cribs have been used for years and are extremely handy for occasional overnight trips, supervised naps in tight quarters, or even day trips to Grandma's house. A popular version of a portable crib has sides that are hinged so that upon folding, each side collapses into the end piece, which is constructed like one half of a suitcase. The end pieces are then latched together to provide a self-contained suitcase-like unit. Certain versions of this collapsible crib have the same folding mechanism as well as side panels provided with spring-loaded barrel bolts, which lock the respective sides in the open position when the crib is in use.

SUMMARY

In one general aspect of the invention, a portable crib includes a base platform sized and configured to support a child, and inflatable side panels extending vertically from and surrounding the base platform. The base platform and side panels define an enclosure for the child, at least one of side panels having an outer inflatable frame surrounding a region configured to allow visibility within the enclosure.

Embodiments of this aspect of the invention may include one or more of the following features.

The region configured to allow visibility within the enclosure is formed of a woven mesh. Thus, a child placed within the crib can be assured to be well ventilated and visible to anyone monitoring the child. For example, the woven mesh is bonded to the outer inflatable frame (e.g., using heat sealing). Alternatively, the woven mesh is stitched to the outer inflatable frame using a binding tape positioned between the woven mesh and the outer inflatable frame. For example, stitching is provided between the binding tape and the woven mesh and between the binding tape and the outer inflatable frame.

Each of the side panels is configured to be inflatable from a single valve. Alternatively, the side panels are individually inflatable so that the entire crib does not deflate in the event that one of the panels is punctured.

In certain embodiments, the base platform is integral to the side panels. Alternatively, the base platform can be separate and removable unit allowing the platform to be easily assembled/disassembled and cleaned more easily. The base platform may be inflatable and may include elongated ribs. In other embodiments, the base platform can be in the form of a mesh.

The base platform and side panels define a rectangular enclosure. The side panels have a lower end with a width greater than an upper end of the panels. That is, the side panels taper upwardly to provide a broader base for added stability. The side panels are configured to be inflated with air, although other inflation mediums may be used (e.g., water). The crib includes a pump to inflate the side panels and, if necessary, base platform.

In general, the crib is lightweight and portable. Among other advantages, the crib is designed to be mechanically stable without the need for additional reinforcing structure. The side panels and bottom platform are formed of materials that are safe (e.g., non-toxic) and comfortable when inflated. The crib requires virtually no assembly other than inflating. When the crib is no longer required to be used, the air is simply released from the side panels by mechanical or manual methods (in certain embodiments from the bottom platform as well) and the crib is rolled into a compact lightweight package and stowed for later use.

For safety precautions, some embodiments include an inflatable member configured to support the side panels of the crib and attached to the outer periphery of the base platform so that the child will not suffocate, should the member deflate. With a similar member attached to the inner periphery of the base platform, a potential exists for the child to puncture the member and entangle himself in the deflated material.

As a further precaution, some embodiments also include protective webbing attached to the inner walls of the crib. This layer seals of the inflatable panels so that the child cannot puncture them and entangle himself among the deflated material. Such entanglement may harm the child, for instance, causing suffocation. Attaching the inflatable member to the outer periphery and attaching protective webbing to the inner periphery thus prevent the occurrence of such harm.

The details of one or more embodiments of the invention are set forth in the accompanying drawings and the description below. Other features, objects, and advantages of the invention will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

Fig. 1 is a perspective view of an inflatable crib

Fig. 2 is an enlarged view of a portion of the inflatable crib showing the interface between the meshed netting and the air-filled chamber of the outer frame of the crib.

Fig. 3 is a plane view of the floor support member of the inflatable crib of Fig. 1.

Fig. 4 is a cross-sectional side view of the floor support member of Fig. 2.

Fig. 5 is a perspective view of an alternative embodiment of an inflatable crib.

Fig. 6 is an alternative embodiment of an inflatable crib, which includes an inflatable member attached to the outer periphery of the base platform.

Fig. 7 is an alternative embodiment of an inflatable crib, which includes a protective member that seals off the inner, inflatable panels.

DETAILED DESCRIPTION

Referring to Fig. 1, an inflatable crib 10 includes four inflatable side panels 12 attached at a lower end of the panels to a floor support 14. The four inflatable side panels 12 and floor support together define an enclosed volume for enclosing a baby or young child. Each side panel has a height sufficient for preventing the child from escaping the enclosed volume when the panels are fully inflated. One of side panels 12 includes its own valve 16 for inflation and deflation. Side panel 12 is inflatable using a hand or foot pump 18. Alternatively, the side panels can be inflated using an electrically powered pump (e.g., battery) or from the mouth of the assembler. In alternative embodiments, each of side panels 12 is individually inflatable.

As shown in Fig. 1, pump 16 includes a bellows 20 that by alternate contraction and expansion draws air in through a pump valve (not shown) and expels it to valve 16 of a side panel 12 through a tube 22 having a nozzle 24. The valve 16 is of the type having a stem that extends from the surface of the side panel during inflation and an open end for receiving a cap. The stem includes an internal flap that prevents air introduced into the chamber of the side panel from escaping. When the chamber is fully inflated, the stem is sealed with the cap and then pressed into the chamber of the side panel. To release the air from the chamber, the stem is withdrawn from the chamber, the cap removed, and the stem is squeezed to displace

the internal flap sufficiently to allow air to escape. Other valve mechanisms for allowing quick release of air may be used as well. Valve 16 is positioned at the lower end of an outer surface of an associated side panel, where it is essentially inaccessible by a child in the crib.

Each side panel is formed from a pair of adjacent sheets 26a, 26b formed of flocked polyvinylchloride (PVC) or other durable, but pliable material. The adjacent sheets are heat sealed at inner and outer peripheral regions to form seams 28 that define air-receiving chambers. The air-filled chambers form an outer frame that surrounds a mesh-like netting 30 formed of nylon for allowing air to pass through to the child in the enclosed volume as well as to provide visibility of the child within the enclosed volume. One approach for heat-sealing the air-filled chambers or tubes of the side panels is radio frequency (RF) heat-sealing.

Referring to Fig. 2, in an alternative approach, one edge of a binding tape 34 is attached to an outer edge of mesh-like netting 30 and then folded over so that the opposite edge of the binding tape is attached to an inner edge of the mesh-like netting. A folded-over length of binding tape 36 is attached to the edge of the outer peripheral region 38 of the outer frame that is not inflated. Binding tapes 34, 36 are positioned to overlap each other and a stitching 38 is then sewn through the tapes to secure the mesh-like netting and the outer frame together. In an alternate embodiment, the mesh-like netting 30 and the outer peripheral region 38 of the outer frame are sewn together with stitching and then covered with a binding tape to reinforce the stitching. In this example, each side panel 12 is trapezoidal in shape having a lower edge that is wider than an upper edge.

Referring to Figs. 3 and 4, crib 10 also includes a separate inflatable cushion 40 formed of PVC and sized and shaped to cover floor support 14. Cushion 40 is removable to make assembly/disassembly and cleaning easier. Cushion 40 includes heat sealed seams 42 that extend virtually the entire length of the cushion 40 to form a series of cylindrically shaped air compartments. Each of the cylindrically shaped compartments has at least one air passage connected to adjacent compartments to allow air to pass from one compartment to the other when air is introduced through a valve 44.

Other embodiments are within the scope of the claims.

Referring to Fig. 5, for example, the floor support of inflatable crib 50 can include a mesh floor 52 made from the same or similar material used for mesh netting 30. In this

version of an inflatable crib, the floor support weighs less and provides increased ventilation when compared with a solid floor support of the embodiment shown in Fig. 1.

In the embodiment described above in conjunction with Figs. 1-4, inflatable cushion 40 was separate from crib 10 allowing it to be removed and easily cleaned or replaced. In other embodiments, inflatable cushion, although separately inflatable, is attached or otherwise secured to the floor support 14.

In the embodiments described above, valve 16 was used to release the air from side panels 12. As discussed above, in certain embodiments, each side panel is independently inflatable through its own valve 16. In either embodiment, a separate opening or waste gate having, for example, a wider mouth, is provided to permit faster deflation of crib 10.

In the embodiments described above, air from the assembler's lungs or pump is used to inflate the compartments of the side panels and bottom cushion. In other embodiments, water or other fluids may be used to inflate the compartments.

Referring to Fig. 6, a crib 100 includes an additional structure for minimizing the possibility that a child becomes entrapped between parts of the inflatable crib in the event that the side panels of the crib are deflated. In particular, in one embodiment, an independently inflatable base member 15 is attached at the base of each of the side panels and around the entire periphery 13 of the base platform 14 of the crib 100. The inflatable base member is attached to the base platform in the same manner as the side panels, previously discussed, and likewise includes a valve for inflation. When inflated, the inflatable base member 15 has a height that is commensurate with the width of the inflatable portions of the side panels. In the event that the side panels become deflated, through inadvertent opening of the valves or accidental puncture, the inflatable base member 15 prevents the side panels from fully collapsing. Thus, if a child's head becomes positioned along a side panel before it is deflated, the risk of suffocation is minimized.

In other embodiments, further protection can be provided by preventing the child's head from moving into corner areas of crib 100. For example, referring to Fig. 7, a protective member in the form of a webbing 31 is attached at corner regions of the crib. Specifically, side edges of the protective webbing are bonded, sewed or otherwise attached to the inner panels 12 of the crib in the same manner as the visibility screens 30, discussed above. Protective webbing 31 prevents the child from squirming or rolling into the corner

regions of the crib where the risk of suffocation is higher should the side panels deflate. In some embodiments, the protective webbing is formed of a woven mesh and may be provided along the entire inner periphery of the crib.

A number of embodiments of the invention have been described. Nevertheless, it will be understood that various modifications may be made without departing from the spirit and scope of the invention. Accordingly, other embodiments are within the scope of the following claims.

What is claimed is: